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IS 15366 (2003): Dolomite for Paint Industry [CHD 20: Paints, Varnishes and Related Products]

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Indian Standard

DOLOMITE FOR PAINT INDUSTRY — SPECIFICATION

ICS 73.080; 87.060.10

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

July 2003

Price Group 3

Paints, Varnishes and Related Products Sectional Committee, CHD 20

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Paints, Varnishes and Related Products Sectional Committee had been approved by the Chemical Division Council.

Dolomite is used as a source of lime and magnesite for ceramic whiteware. Standards on Dolomite for ceramic industry, glass industry and steel industry have been formulated; however a need was felt to formulate a separate standard on dolomite for specific use of paint industry. This product is mainly used in water based paint.

Due to geological difference and due to different kinds of source of material being available in India the requirements of this standard are different from the requirements specified in ISO 3282 (Part 7).

The composition of the Committee responsible for the formulation of this standard is given in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DOLOMITE FOR PAINT INDUSTRY — SPECIFICATION

1 SCOPE

This standard prescribes requirements and methods of sampling and test for dolomite for use as extender in paint industry.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	Title
33 : 1992	Method of sampling and test for inorganic pigments and extenders for paint (*third revision*)
1070 : 1992	Reagent grade water (*third revision*)
1303 : 1983	Glossary of terms relating to paints (*second revision*)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1303 and IS 33 shall apply.

4 REQUIREMENTS

4.1 The material shall be in the form of fine microcrystalline, free flowing powder or in such a condition that it can be reduced to powder form by crushing without grinding action under a palette knife. The material shall be stable in air, free from visible impurities and shall closely match the approved sample in colour.

4.2 The material shall also comply with the requirements given in Table 1.

5 PACKING AND MARKING

5.1 Packing

The material shall be packed as agreed between the purchaser and the supplier.

5.2 Marking

The packages shall be securely closed and marked with following particulars:

a) Name and type of the material;
b) Name of the manufacturer or his recognized trade-mark;
c) Mass of the material;
d) Batch No. or Lot No. in code or otherwise; and
e) Month and year of manufacture.

Table 1 Requirements for Dolomite for Paint Industry

(*Clause* 4.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex	Clause of IS 33
(1)	(2)	(3)	(4)	(5)
i)	Volatile matter, percent by mass, *Max*	0.5	—	8
ii)	Residue on sieve, (500 mess/25 micron), percent by mass, *Max*	1.0	—	9
iii)	Oil Absorption	12-14	—	10
iv)	*p*H Value	9-10	—	21
v)	Loss on Ignition percent by mass, *Max*	40-45	A	—
vi)	Acid insoluble residue, percent by mass, *Max*	10	A	—
vii)	Calcium Carbonate, percent by mass	40-45	A	—
viii)	Magnesium Carbonate, percent by mass	42-44	A	—

5.3 BIS Certification Marking

The packages may also be marked with the Standard Mark.

5.3.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standard Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING

6.1 Representative samples of the material shall be drawn as prescribed under **5** of IS 33.

6.2 Criteria for Conformity

A lot shall be declared conforming to the requirements of this standard if the test results of the composite sample satisfy the requirements given in **4**.

7 TESTS

7.1 Tests shall be conducted according to the methods prescribed in various clauses of IS 33 and various annexes to this standard.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(*Table* 1)

METHOD OF TEST

A-1 DETERMINATION OF LOSS ON IGNITION

A-1.1 Procedure

Weigh accurately about 1 g of the test sample, previously dried at 100 ± 2°C to constant mass into a platinum crucible; heat the crucible along with its contents at the temperature of 1 000 ± 25°C in a muffle furnace and ignite for 2 h. Weigh, repeat heating/ cooling and weighing, till a constant mass is obtained. Express the loss in mass as the percentage of material taken for the test.

NOTE — Care should be taken to avoid hydration of the quick lime, formed during the process.

A-2 DETERMINATION OF ACID INSOLUBLE RESIDUE

A-2.1 Apparatus/Reagents

A-2.1.1 *Hydrochloric Acid* — 1 : 1 *v/v*.

A-2.1.2 *Whatman Filter Paper No. 41*

A-2.1.3 *250 ml Beaker*

A-2.2 Procedure

Take about 5g of accurately weighed test sample in a clean 250-ml beaker and add 10 ml distilled water. Add 50 ml of 1 : 1 HCl slowly to it and heat it on a hot plate for about 30 min. Cool it to room temperature and filter it through previously dried and weighed Whatman filter paper No. 41. Wash the filter paper with distilled water till free from chlorides (this can be tested with $AgNO_3$ solution, white precipitate indicates presence of chlorides). Dry the filter papers in an electric oven at about 100 to 105°C and weigh.

A-2.3 Calculation

$$\text{Acid insoluble matter, percent by mass} = \frac{100\,(Y - X)}{\text{Mass of sample}}$$

where

X = mass of the empty filter paper, in g,

Y = mass of the filter paper + Acid insoluble residue, in g, and

$(Y - X)$ = mass of the acid insoluble residue, in g.

A-3 DETERMINATION OF CALCIUM AND MAGNESIUM

A-3.1 Reagents

A-3.1.1 *Dilute Hydrochloric Acid* — approximately 5 N.

A-3.1.2 *Ammonium Oxalate Solution* — saturated.

A-3.1.3 *Dilute Ammonium Hydroxide* — approximately 5 N and 1 N.

A-3.1.4 *Dilute Potassium Permanganate Solution* — approximately 0.01 N.

A-3.1.5 *Dilute Sulphuric Acid* — approximately 5 N.

A-3.1.6 *Standard Potassium Permanganate Solution* — 0.1 N.

A-3.1.7 *Sodium Ammonium Phosphate* — saturated.

A-3.1.8 *Ammonia* (2 percent)

A-3.2 Preparation of Sample Solution

Weigh accurately about 1 g of sample, previously dried at 100 ± 2°C, into a platinum crucible and ignite as in A-2.1 Transfer the contents of the crucible completely to a 250 ml beaker with the help of water from a wash bottle jet. Rinse the crucible with a few millilitres of dilute hydrochloric acid to detach particles adhering to the crucible. Continue addition of hydrochloric acid to the beaker till a total of 40 ml of acid has been added. Heat the solution and boil for about 10 min. Cool and transfer completely to a 200 ml graduated flask, add water to make up the volume and mix thoroughly.

A-3.3 Precipitation of Calcium

Pipette out 50 ml of the prepared sample solution into a beaker to boiling and add 15 ml of water. Heat almost to boiling and add 15 ml of ammonium oxalate solution. To the hot solution, while constantly stirring, add dilute ammonium hydroxide (5N), dropwise, until the mixture is strongly alkaline. Let it stand for 2 h. Decant the supernatant liquid through a filter paper (Whatman No. 40) and preserve the liquid for estimation of magnesium.

A-3.4 Estimation of Calcium

Transfer all the precipitate from beaker to the filter paper by addition of cold water. The precipitate on the filter paper, is treated first with dilute ammonium hydroxide (1 N) and next with cold water untill the filterate does not decolourize dilute potassium permanganate solution in presence of dilute sulphuric acid. Puncture the filter paper and transfer the precipitate to a beaker with a fine jet of hot water. Add about 30 ml of dilute sulphuric acid, heat at 60°C and titrate with standad potassium permanganate solution. Towards the end of the titration introduce the filter paper which was used for filteration, into the titration vessel and carry out the titration till the end point is reached. Carry out a blank titration with all reagents, following the same procedure for the test but without the material.

A-3.5 Calculation

$$\text{Calcium carbonate as } (CaCO_3), \text{ percent by mass} = \frac{2.002\,(V_1 - V_2)N}{M}$$

where

V_1 = volume, in ml, of standard potassium permanganate solution used for the test;

V_2 = volume, in ml, of standard potassium permanganate solution used for the blank test;

N = normality of standard potassium permaganate solution; and

M = mass, in g, of the material for the test.

A-3.6 Estimation of Magnesium

The filterate after decantation is concentrated to 100 ml. Add 20 ml of saturated solution of ammonium hydrophosphate, followed by 20 ml of ammonium hydroxide. The solution is stirred vigorously, using a rubber tipped glass rod and keep overnight. Precipitation of magnesium salt is carried by scratching of the solution. Filter the precipitate through Whatman No. 40 filter paper and wash thoroughly with 2 percent ammonia solution. Dry and ignite the residue in a previously weighed platinum crucible at 1 000 ± 25°C in a muffle furnance. After complete ignition cool and weigh the residue.

A-3.7 Calculation

$$\text{Magnesium carbonate } (MgCO_3), \text{ percent by mass} = \frac{3.030\,8\,(a - b)\times 100}{M}$$

where

$(a - b)$= weight of residue in g,

M = mass, in g, of the material for the test,

a = mass of the crucible and residue, in g, and

b = mass of empty crucible.

ANNEX B

(Foreword)

COMMITTEE COMPOSITION

Paints, Varnishes and Related Products Sectional Committee, CHD 20

Organization	*Representative(s)*
In personal capacity (*14 Orion, Oomar Park, Bhulabhai Desai Road Mumbai - 400 026*)	Shri Ravi Marphatia (***Chairman***)
Addisons Paint and Chemicals Ltd, Chennai	Shri R. Srinivasan
Asian Paints (India) Ltd, Mumbai	Shri A. B. Menon Dr B. P. Malik (*Alternate*)
Bajaj Auto Limited, Pune	Representative
Berger Paints India Ltd, Howrah	Shri K. Nirmal Kumar Shri N. K. Ray (*Alternate*)
Bharat Heavy Electricals Ltd, Tiruchirapalli	Shri M. Somu
Central Building Research Institute, Roorkee	Dr. L. K. Agarwal Dr K. K. Asthana (*Alternate*)
Central Public Works Department, New Delhi	Representative
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Consumer Unity and Turst Society (CUTS), Jaipur	Shri Sandeep Singh
Continental Coatings Pvt Ltd, Chennai	Shri M. B. Satyanarayana
Directorate General of Supplies and Disposal, New Delhi	Representative
Export Inspection Council of India, New Delhi	Representative
Goodlass Nerolac Paints Ltd, Mumbai	Shri S. V. Porwal
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ICI (India) Ltd, Kolkata	Representative
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Indian Paints Association, Kolkata	Dr M. B. Guha Shri V. M. Natu (*Alternate*)
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Indian Small Scale Paint Association, Mumbai	Representative
Jenson and Nicholson (India) Ltd, West Bengal	Representative
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National Organic Chemical Industries Ltd, Mumbai	Dr B. V. Bapat
National Test House (ER), Kolkata	Dr B. B. Pal Dr Sunil Kumar Saha (*Alternate*)
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Office of the SA to CNS, New Delhi	Shri R. K. Sehgal
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(*Continued on page* 5)

(*Continued from page* 4)

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The Indian Turpentine and Rosin Co Ltd, Barilly	Shri R. C. Bassi,
Travancore Titanium Products Ltd, Thiruvananthapuram	Shri V. S. Bashir Dr. K. Gopinathan Nair (*Alternate*)
U. K. Paints Industries, New Delhi	Shri V. K. Nayyar
BIS Directorate General	Shri S. K. Chaudhuri, Director and Head (Chem) [Representing Director General (*Ex-officio*)]

Member Secretary
Shri N. K. Bansal
Joint Director (Chem), BIS

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